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Court S. Rich AZ Bar No. 021290 1 Rose Law Group pc 2 7144 E. Stetson Drive, Suite 300 Scottsdale, Arizona 85251 3 Direct: (480) 505-3937 Fax: (480) 505-3925 4 Attorney for Energy Freedom Coalition of America 5 BEFORE THE ARIZONA CORPORATION COMMISSION 6 7 **DOUG LITTLE BOB BURNS BOB STUMP** 8 **CHAIRMAN** COMMISSIONER **COMMISSIONER** 9 TOM FORESE ANDY TOBIN COMMISSIONER **COMMISSIONER** 10 IN THE MATTER OF THE) DOCKET NO. E-01461A-15-0363 11 APPLICATION OF TRICO ELECTRIC) 12 COOPERATIVE, INC, AN ARIZONA NONPROFIT CORPORATION, FOR A 13 **DETERMINATION OF THE CURRENT FAIR VALUE OF ITS** 14 UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS RATES) THE ENERGY FREEDOM COALITION 15 AND CHARGES FOR UTILITY) OF AMERICA'S NOTICE OF 16 **SERVICE AND FOR RELATED**) REBUTTAL TESTIMONY OF APPROVALS.) WILLIAM A. MONSEN 17 18 The Energy Freedom Coalition of America ("EFCA") hereby submits the Rebuttal 19 Testimony of William A. Monsen in the above-referenced matter. 20 Respectfully submitted this 15th day of August, 2016. 21 22 Arizona Corporation Commission /s/ Court S. Rich 23 DOCKETED Court S. Rich 24 Rose Law Group pc AUG 15 2016 Attorney for EFCA 25 DOCKETED BY 26 27

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7 8	I have this day served the foregoing document sending a copy via electronic or regular mail t	nts on all parties of record in this proceeding by to:
9 10	Janice Alward Arizona Corporation Commission jalward@azcc.gov	C. Webb Crockett
11 12	Thomas Broderick Arizona Corporation Commission tbroderick@azcc.gov	Patrick Black Fennemore Craig, P.C wcrockett@fclaw.com pblack@fclaw.com
13 14	Kevin Higgins Energy Strategies, LLC khiggins@energystrat.com	Vincent Nitido Trico Electric Cooperative, Inc. vnitido@trico.coop
15 16 17 18	Michael Patten Jason Gellman Snell & Wilmer L.L.P. mpatten@swlaw.com jgellman@swlaw.com	Robert Hall Solar_bob@msn.com Charles Wesselhoft Pima County Attorney's Office
19 20	COASH & COASH mh@coashandcoash.com	Charles.wesselhoft@pcao.pima.gov
21 22	By: /s/ Hopi L. Slaughter	
23		
24		
25		
2627		

REBUTTAL TESTIMONY OF WILLIAM A. MONSEN REGARDING THE PROPOSED SETTLEMENT ON BEHALF OF THE ENERGY FREEDOM COALITION OF AMERICA (EFCA) (Docket No. E-01461A-15-0363)

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1	I.	Introduction and Summary of Testimony
2		
3	Q.	Please state your name, position and business address.
4	A.	My name is William A. Monsen. I am a Principal at MRW & Associates, LLC (MRW).
5		My business address is 1814 Franklin Street, Suite 720, Oakland, California.
6		
7	Q.	On whose behalf are you providing this testimony?
8	A.	I am providing this testimony on behalf of the Energy Freedom Coalition of America
9		(EFCA).
10		
11	Q.	Have you previously submitted testimony in this docket?
12	A.	Yes. I submitted opening testimony regarding Trico's initial application ¹ and I submitted
13		opening testimony regarding the Proposed Settlement between Trico and the Staff of the
14		Commission. ²
15		
16	Q.	How is your testimony organized?
17	A.	Following this brief introduction and summary, my rebuttal testimony is organized as
18		follows:
19		 Section 2 discusses how Trico and Staff have not met their burden to justify the
20		Proposed Settlement;
21		• Section 3 addresses addresses how Trico has not justified the Proposed Settlment's
22		so-called "grandfathering" provisions;
23		 Section 4 discusses how Trico's own testimony demonstrates that the Proposed
24		Settlement's mandatory residential demand charge and freeze of Trico's residential
25		TOU rate option are inappropriate;

¹ Direct Testimony of William A. Monsen on Behalf of the Energy Freedom Coalition of America (EFCA), Docket No. E-01461A-15-0363. June 1, 2016. (Monsen Opening Testimony)

Section 5 explains how Trico does not justify why it would be appropriate for the

Proposed Settlement to significantly change Trico's Net Energy Metering (NEM)

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² Direct Testimony of William A. Monsen Regarding Proposed Settlement on Behalf of the Energy Freedom Coalition of America (EFCA), July 29, 2016. (Monsen Opening Settlement Testimony)

1 rules prior to the Commission issuing a final decision in the Value of Solar Docket; 2 and 3 Section 6 addresses Staff's flawed analysis of the economics of solar distributed 4 generation (solar DG). 5 6 Q. Please summarize your recommendations and conclusions. 7 A. Both Trico and Staff submitted testimony in support of the Proposed Settlement, yet 8 neither offered support justifying the Proposed Settlement on its merits. Their testimony 9 does not justify (1) the Proposed Settlement's flawed attempt at grandfathering existing 10 DG members and those members who have or will soon file interconnection applications, 11 (2) the Proposed Settlement's premature attempt to implement a mandatory residential 12 demand charge and freeze Trico's residential TOU rate option, and (3) implementing a 13 new DG export rate in advance of a final decision in the Commission's value of solar 14 docket. In addition, Staff presents a flawed analysis of solar DG economics. 15 16 Neither Trico nor Staff have provided any rationale for the fact that the "grandfathering" 17 provision in the Proposed Settlement does not actually grandfather DG members on their 18 current rates; while it would allow those members to remain on Trico's current NEM 19 tariff, it would allow Trico to dramatically alter those members' overall rate structure 20 and, therefore, the value of their NEM credits. 21 22 Trico and Staff fail to provide support for the Proposed Settlement's effort to implement 23 a residential demand charge prior to Trico completing the necessary billing and metering 24 infrastructure upgrades and implementing a comprehensive education program for its 25 members. Similarly, Trico and Staff do not demonstrate why it is necessary to freeze 26 Trico's residential TOU tariff at this time. 27 28 Trico provides no evidence supporting the appropriateness of the Proposed Settlement's 29 new DG buyback rate and no rationale for the fact that the Proposed Settlement would 30 preempt the issuance of a final decision in the Commission's Value of Solar docket. 31 Trico has instead merely compared its rates to a different utility.

1	Fi	nally, Staff provides a flawed analysis of solar DG economic and the appropriate
2	fir	nancial benchmarks to which Trico members' DG investments should be compared.
3		
4	In	light of these flaws and shortcomings in both the Proposed Settlement and the
5	su	pporting testimony submitted by Trico and Staff, the Commission should reject the
6	Pr	oposed Settlement's provisions impacting DG members as discussed in my testimony.
7	Th	ne Commission should instead implement more appropriate provisions that reflect the
8	ev	idence at hand as well as recent Commission guidance.
9		
10	In	particular, the Commission should:
11	1.	Fully grandfather all net metering members that have existing DG or that submitted a
12		completed interconnection application by no more than 30 days after a final decision
13		in this docket is no longer appealable under their current NEM tariff and rate design;
14	2.	Require that Trico grandfather the above-mentioned net metering members for the
15		shorter of (1) the term of the customer's interconnection agreement or (2) 20 years
16		from the date that the system was installed;
17	3.	Reject the Proposed Settlement's mandatory three-part rate structure and direct Trico
18		to maintain its current rate structure;
19	4.	Reject the Proposed Settlement's premature freezing of the residential TOU tariff and
20		consider directing Trico to conduct a pilot study of residential TOU adoption and
21		marketing effectiveness;
22	5.	Give no weight to Trico's misleading references to the opening testimony filed by
23		Robert Hall;
24	6.	Give no weight to Trico's inappropriate comparison of its rates with those of Tucson
25		Electric Power;
26	7.	Reject the Proposed Settlement's DG buyback rate and instead address all net
27		metering and rate design issues that could affect DG members in a second phase of
28		this proceeding following the issuance of a final decision in the Value of Solar
29		docket; and
30	8.	Give no weight to Staff's flawed analysis of solar DG economics.

II. Trico and Staff Have Not Met Their Burden to Justify the Proposed Settlement

- 3 Q. How many parties in this docket have agreed to sign on to the Proposed Settlement?
- 4 A. While six parties participated in the discussions regarding the Proposed Settlement, just two parties agreed to sign onto the Proposed Settlement.³

6

- 7 Q. What does this indicate?
- 8 A. While I cannot speak for the other parties, it appears that four of the six parties that were presented with the Proposed Settlement were not convinced that the Proposed Settlement is a fair and reasonable resolution of the issues in this docket.

11

- Q. What evidence has Trico provided in support of the Proposed Settlement's DG- and
 rate design-related components?
- A. Trico's testimony primarily describes the Proposed Settlement's components and makes generalized assertions regarding the components' appropriateness. However, it does quantify its alleged lost fixed costs due to members installing DG systems, calculating that its alleged lost fixed costs under the Proposed Settlement would be less than they currently are, but more than they would be under Trico's initial application.⁴

19

- Q. Has Trico provided any evidence in support of the Proposed Settlement's various components that would directly impact residential members?
- As discussed in my direct testimony related to the Proposed Settlement and in the remainder of this rebuttal testimony, it has not. For example, while Trico attempts to justify the Proposed Settlement's export rate by comparing an illustrative average compensation rate to Tucson Electric Power's (TEP's) energy charges,⁵ Trico has not provided any evidence justifying the Proposed Settlement's export rate on its own merits.

27

⁵ Hedrick Settlement Testimony, pp. 14-15.

³ Testimony of Vincent Nitido In Support of Settlement Agreement on Behalf of Trico Electric Cooperative, Inc., Docket No. E-01461A-15-0363 July 29, 2016. (Nitido Settlement Testimony), pp. 15-16.

⁴ Testimony Of David Hedrick In Support of Settlement Agreement on Behalf of Trico Electric Cooperative, Inc. Docket No. E-01461A-15-0363 July 29, 2016 (Hedrick Settlement Testimony), pp. 11-14.

1	Q.	What evidence has Staff provided in support DG- and rate design-related
2		components of the Proposed Settlement?
3	A.	Staff provided scant evidence supporting the Proposed Settlement except for a discussion
4		of why it believes that solar DG would still represent a reasonable investment for Trico
5		members under the Proposed Settlement. ⁶ While I will discuss the flaws in that
6		discussion later in my testimony, the more important overarching point is that, like Trico
7		Staff fails to provide significant evidence supporting the DG- and rate design-related
8		components of the Proposed Settlement on their merits.
9		
10	Q.	Why does this concern you?
11	A.	Trico and Staff appear to have ignored the many significant practical and policy-related
12		flaws in the DG- and rate design-related components of their Proposed Settlement in
13		exchange for reaching a settlement of this docket.
14		
15	Q.	What do you recommend?
16	A.	The Commission should give little or no weight to Trico's and Staff's support for the
17		Proposed Settlement's DG- and rate design-related components due to the lack of
18		justification presented in favor of these elements. The Commission should either refuse to
19		adopt these components of the Proposed Settlement and address them in a second phase
20		of this docket commencing after the conclusion of the ongoing Value of Solar docket, or
21		should adopt the modifications I proposed in my direct testimony related to the Proposed
22		Settlement.
23	III.	Trico and Staff Have Not Justified the Proposed Settlement's
24		"Grandfathering" Provisions
25	Q.	How does Trico describe the Proposed Settlement's "grandfathering" provision?
26	A.	According to Trico:
27 28 29 30		[t]he Agreement stipulates that the existing Net Metering Tariff will be frozen and will be available only to members whose DG interconnection agreement applications were received on or before May 31, 2016. This grandfathering of the

⁶ Direct Testimony in Support of the Settlement Agreement of Yue Liu, Public Utilities Analyst III, Arizona Corporation Commission. Docket No. E-01461A-15-0363 July 29, 2016. (Liu Settlement Testimony), p. 10

1 existing Net Metering Tariff will allow existing DG customers to continue 2 receiving the existing treatment with respect to compensation for DG energy 3 including banking and payment at the full retail rate. The grandfathering of the 4 Net Metering Tariff for existing customers will continue until a decision in 5 Trico's next rate case with the expectation that grandfathering will continue for 6 the remaining term of the member's interconnection agreement or for 20 years, 7 whichever is longer.⁷ 8 9 Trico also notes that "[o]ther than the net metering tariff, there is no grandfathering of 10 rates or rate design for DG or other members. Once new rates are approved and in effect, 11 all members will be subject to the applicable rate schedule. For residential customers 12 (both DG members and non-DG members) the three-part rate set forth in rate schedule 13 RS1 will apply, for example."8 14 15 Q. Have Trico and Staff justified the grandfathering provisions in the Proposed 16 Settlement? 17 A. No. As discussed below, neither Trico nor Staff have justified (1) the proposal to 18 establish a deadline for grandfathered solar DG members prior to the final decision in this 19 docket, (2) the failure of the Proposed Decision to grandfather the rate design of the solar 20 DG members, or (3) the failure to grandfather solar DG customers beyond the current 21 General Rate Case. Because of these failings, the Proposed Settlement effectively does 22 not grandfather existing solar DG members on the NEM program under which they 23 initially pursued solar DG. Each of these issues is discussed in more detail below. 24 25 Does the Proposed Settlement offer full grandfathering to Trico's existing solar DG O. 26 members? 27 No. By establishing a cutoff date that is prior to the effective date of the decision in this A. 28 docket and by allowing major changes to the rate design for the allegedly 29 "grandfathered" customers, the Proposed Settlement does not fully grandfather existing 30 solar DG members. 31

⁷ Hedrick Settlement Testimony p. 11.

customers on Trico's current NEM tariff?

32

33

Q.

What is the Proposed Settlement's cutoff date for "grandfathering" existing DG

⁸ Nitido Settlement Testimony p. 11.

A. As discussed above, the Proposed Settlement's "grandfathering" cutoff date for members to submit new DG interconnection agreement applications is May 31, 2016.9

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4 Q. What concerns do you have with the Proposed Settlement's "grandfathering" cutoff date?

6 I discussed my concerns with using any grandfathering cutoff date prior to 30 days after A. 7 the issuance of a final decision regarding the proposed changes to Trico's NEM tariff in 8 my direct testimony regarding Trico's application¹⁰ as well as in my direct testimony regarding the Proposed Settlement.¹¹ In my previous testimony regarding the Proposed 9 10 Settlement, I also explained why grandfathering after the final decision in this docket is justified by previous Commission actions. 12 My concerns included the fact that the cutoff 11 date in the Proposed Settlement was apparently selected arbitrarily, the cutoff date would 12 13 be contrary to the position previously expressed by the Commission regarding 14 grandfathering, and would create unnecessary future uncertainty with regard to rates by 15 setting a precedent for retroactive ratemaking. 13

Q. Has Trico provided justification for using a cutoff date prior to the issuance of a final decision in this docket regarding the proposed NEM tariff changes?

No. Trico's testimony in support of the Proposed Settlement provides no justification for choosing this date. Trico notes that the change in the "grandfathering" cutoff date from the proposal in its application to the cutoff date in the Proposed Settlement would increase the number of grandfathered DG customers by 359, which Trico claims would also increase its lost fixed costs. However, Trico provides no justification for why this issue requires the Commission to accept setting a precedent in favor of retroactive ratemaking. Even though Trico claims that the Proposed Settlement's new DG export tariff would not be applied retroactively, Trico is incorrect: a decision in this docket would apply to all DG interconnection applications submitted after May 31, 2016, and a final decision has not yet been issued on NEM tariff issues in this docket, meaning that

⁹ Hedrick Settlement Testimony, p. 11.

¹⁰ Monsen Opening Testimony, pp. 7-10.

¹¹ Monsen Opening Settlement Testimony, pp. 7-11.

¹² Monsen Opening Testimony, pp. 7-9.

¹³ Monsen Opening Testimony, pp. 7-10.

¹⁴ Hedrick Settlement Testimony, p. 14.

¹⁵ Nitido Settlement Testimony, p. 10.

2		retroactively to members that submit interconnection applications between the May 31,
3		2016 and the date of the final decision.
4		
5	Q.	Staff claims that the proposed cutoff date in the Proposed Settlement incorporates
6		the interest of the solar industry. 16 Do you agree?
7	A.	No. By establishing the cutoff date prior to the effective date of the decision in this
8		docket, the Proposed Settlement simply creates confusion among Trico members that
9		were planning to pursue solar DG for their homes.
10		
11	Q.	Is the cutoff date in the Proposed Settlement's "grandfathering" provision
12		consistent with recent actions in other dockets?
13	A.	No. Consistent with the discussion of the ALJ Recommendation in my direct testimony, a
14		recent Commission decision in the UNSE General Rate Case rejected this approach and
15		would set a grandfathering cutoff after the issuance of a final decision. ¹⁷
16		
17	Q.	Would the Proposed Settlement allow Trico to change existing DG members'
18		current rate design?
19	A.	Yes. As discussed above, under the Proposed Settlement, members who have already
20		installed or submitted interconnection applications to install DG systems will pay the
21		same rates as other customers regardless of the rate design that those members took
22		service under when they installed their solar DG systems. Trico specifically mentions the
23		implementation of a three-part residential rate as a rate design change that would apply to
24		these DG members. ¹⁸
25		
26	Q.	How would the Proposed Settlement's "grandfathering" provision impact existing
27		DG members?
28	A.	I discussed at length in my direct testimony regarding the Proposed Settlement why
29		grandfathering Trico's NEM tariff but not its current rate design is not truly

any decision by the Commission in this docket would clearly apply that new tariff

Direct Testimony in Support of the Settlement Agreement of Terri L. Ford, Assistant Director, Utilities Division, Arizona Corporation Commission. Docket No. E-01461A-15-0363 July 29, 2016. p. 15.
 Monsen Opening Settlement Testimony, p. 10.
 Hedrick Settlement Testimony, p. 4.

grandfathering. Thus, the "grandfathering" provisions of the Proposed Settlement are not an appropriate or effective way to maintain the cost structure expected by those members who installed DG systems prior to the grandfathering date. ¹⁹ Future changes in rate design that would apply to existing DG members could reduce the value of the Proposed Settlement's grandfathering period. That is, future changes in rate design could render members' DG investment worthless or even make it a liability for the member if the changes are significant enough to undermine the economics of the solar DG investment. For example, if Trico were to institute a large demand charge and were to increase its monthly fixed charge for residential members, their systems may no longer be cost-effective. Nothing in the Proposed Settlement would prevent this from occurring.

Q. Is Trico's support of this "grandfathering" provision consistent with its previous testimony regarding grandfathering existing DG customers?

A. No. As discussed in my direct testimony regarding the Proposed Settlement,²⁰ this is contrary to Trico's position in testimony supporting its application. Trico's initial testimony in this docket clearly states that a change in rate structure is unfair to existing solar DG customers "...because those Members acquired and sized their DG systems based on the tariffs at that time without knowledge of the proposed changes. Trico's Board believes it should not dramatically change cost structure for these original DG systems as a matter of fairness. Applying a demand charge to those grandfathered Members would be inconsistent with the Board's determination in that regard."²¹

Q. Did Trico change this position in its Application Amendment filed on May 4, 2016?

A. No. Trico discussed a proposed change in its new rate design proposal, but did not discuss a fundamental re-thinking of its approach to grandfathering existing DG customers.²²

Q. Did Trico provide public notice to its members regarding the dramatic changes to

²⁰ Monsen Opening Settlement Testimony, p. 14.

¹⁹ Monsen Opening Settlement Testimony, pp. 11-14.

²¹ Direct Testimony of Vincent Nitido on Behalf of Trico Electric Cooperative, Inc., Docket No. E-01461A-15-0363. October 23, 2015. (Nitido Direct Testimony) p. 16.

²² Supplemental Testimony of Vincent Nitido on Behalf of Trico Electric Cooperative, Inc. Docket No. E-01461A-15-0363. May 4, 2016. (Nitido Supplemental Testimony) pp. 1-2

1	its proposals	nut forth in its	A mended A	nnlication?
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A. As discussed in the direct testimony of Patrick J. Quinn regarding the Proposed

Settlement, Trico did not provide adequate notice of the changes in its proposals in either

its Amended Application or the Proposed Settlement.²³ This failure to provide notice

effectively deprived typical residential members of an opportunity to understand and

respond to the actual magnitude of the proposed significant changes in Trico's rate

design, implementation of a mandatory demand charge for residential customers, and

Trico's NEM program.

9

- Q. Did Trico or Staff provide an explanation or justification supporting this change in the fundamental rationale regarding the grandfathering of existing DG customers in testimony supporting the Proposed Settlement?
- 13 A. No.²⁴

14

- 15 Q. Have other Arizona utilities proposed new mandatory rate structures for solar DG customers when they proposed to grandfather customers on NEM?
- A. As discussed in my direct testimony regarding the Proposed Settlement, it is my understanding that they have not. It is my understanding that utilities including Arizona Public Service, UNSE, and Tucson Electric Power did not propose to apply mandatory three-part rates for existing DG customers.²⁵

21

- Q. Has the Commission expressed any opinion regarding residential rate design changes for existing DG customers?
- A. My direct testimony regarding the Proposed Settlement addressed the recently issued
 ALJ Recommendation issued in UNSE's rate case, which noted that UNSE proposed
 several residential rate options that will allow solar DG customers to select a rate design
 similar to the one that they have previously been billed under.²⁶ In my direct testimony, I
 also observed that the UNSE ALJ Recommendation would transition customers to TOU

²³ Direct Testimony of Patrick J. Quinn July 29, 2016. pp. 52-53

²⁴ Nitido Settlement Testimony pp. 3 and 8-15, Hedrick Settlement Testimony pp. 11-14, and Direct Testimony of Eric Van Epps in Support of Settlement Agreement on Behalf of Arizona Corporation Commission Staff. Docket No. E-01461A-15-0363. July 29, 2016 (Van Epps Settlement Testimony), pp. 5-6

²⁵ Monsen Opening Settlement Testimony, pp. 8-9.

²⁶ Monsen Opening Settlement Testimony, p. 9.

2		volumetric rates. ²⁷ The Commission recently issued a decision affirming the position that
3		grandfathered customers should not face mandatory changes in their rate structure.
4		
5	Q.	Is the Proposed Settlement consistent with the Commission's recent decision?
6	A.	No. Trico and Staff have proposed a very different approach to rates for its existing solar
7		DG members.
8		
9	Q.	Did Trico or Staff address the recent ALJ Recommendation in the UNSE General
10		Rate Case that supported transitioning customers to TOU rates while maintaining
11		optional rates with different structures? ²⁸
12	A.	No, they did not.
13		
14	Q.	What do you recommend?
15	A.	I recommend that the Commission fully grandfathers all solar DG members that have
16		existing DG or that submitted a completed interconnection application by no more than
17		30 days after a final decision in this docket is no longer appealable. As discussed in my
18		direct testimony related to the Proposed Settlement, this full grandfathering would allow
19		those solar DG customers to continue to take service under the current NEM tariff and
20		under the current rate design for their otherwise applicable tariff. ²⁹
21	IV.	Trico's Own Testimony Demonstrates that the Proposed
22		Settlement's Mandatory Residential Demand Charge and
23		Freeze of Trico's Residential TOU Rate Option Are
24		Inappropriate
25		
26	Q.	What does this section of your testimony address?

rates, while maintaining optional rates with different rate structures, including a two-part

Monsen Opening Settlement Testimony, p. 39.
 Monsen Opening Settlement Testimony, p. 39.
 Monsen Opening Settlement Testimony, p. 6.

1	A.	In this section of my testimony, I discuss why Trico's own testimony demonstrates that it
2		is premature to adopt a mandatory demand charge for Trico's members or to freeze
3		Trico's residential TOU rate option.

A. It is Premature to Adopt a Mandatory Residential Demand Charge for Trico's Members

6 Q. Why did Trico amend its application to include a demand charge in its residential 7 and small commercial rates, and include a new demand charge of \$0/kW in the 8 **Proposed Settlement?**

Trico amended its application and requested that the Commission institute three-part A. 10 residential and small commercial rates "to provide demand information to the members while avoiding unintended consequences should a member have and [sic] unusual or unanticipated spike in electric usage," claiming that it was "more appropriate to introduce a demand rate without charge for residential and small commercial members for the period prior to the Cooperative's next rate case, to collect and analyze member demand data, while simultaneously providing the aforementioned member education."30

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Q. Has Trico been consistently clear that now is an appropriate time to implement a three-part residential rate that includes a demand charge for both DG and non-DG members?

No. Trico readily admits that its members are confused about demand rates; "[b]ased on informal discussions with members at various Cooperative functions (town hall meetings, member events, annual meetings, etc.), Trico believes there is a level of confusion and uncertainty among the membership regarding demand rates and how they work. Trico believes the better approach from a Cooperative standpoint is to educate all of its members regarding demand rates while simultaneously analyzing demand data for the entire membership to determine whether and how to implement demand rates in the future."31 Thus, it is interesting that the Proposed Settlement would implement a demand charge prior to developing an education program regarding demand charges despite it being, in Trico's view, contrary to the best interests of its members.

³⁰ Nitido Settlement Testimony, p. 5

³¹ Trico Response to EFCA DR 5.12(d) (emphasis added). (see Exhibit WAM-1)

1	Q.	Has Trico justified why a \$0/kW demand charge in this rate case is appropriate and
2		required in order for Trico to accomplish its customer education goals?
3	A.	No. As discussed more fully below, Trico has no coherent education plan that depends on
4		establishment of a mandatory demand charge and Trico's billing and metering
5		infrastructure need significant upgrades prior to establishing this mandatory charge. In
6		addition, I discuss how Trico's testimony is misleading regarding Mr. Hall's testimony
7		on this issue.
8		1. Trico has not yet developed an education program and metrics, and has
9		not articulated a clear purpose for the proposed \$0/kW demand charge
10		in educating Trico's residential members
11	Q.	How does Trico plan to educate residential and small commercial customers
12		regarding the concept of demand information and the use of demand charges?
13	A.	This is unclear. The Proposed Settlement states:
14 15 16 17 18 19 20 21 22 23 24 25		The Settlement Agreement provides that Trico will conduct member outreach and education that includes, at a minimum, information on the nature and operation of demand rates, how members can use such rates to minimize their monthly bills and information on tools available from Trico and third parties to help members manage demand. Each member's bill will include the member's peak demand in kW, indicate the date and time of the member's peak demand for the billing period; and education materials will highlight technology solutions including programmable thermostats and load controllers. Trico anticipates developing a comprehensive outreach and education plan under the parameters of the Settlement Agreement following approval of the Settlement Agreement by the Commission. ³²
26		Despite these claims in the Proposed Settlement, Trico essentially has no plan for its
27		education program for customers being moved onto three-part rates with demand charges.
28		
29	Q.	Does Trico have an estimate of the costs associated with this education program?

No.³³ 30 A.

31

32 Has the Commission determined that it is inappropriate for utilities to implement a Q. mandatory three-part rate design including a demand charge prior to providing a 33 formal education plan and tools for managing load? 34

Nitido Settlement Testimony, pp. 7-8.
 Trico Response to EFCA DR 5.11(b). (see Exhibit WAM-1)

Yes. The ALJ Recommendation in the UNSE General Rate Case asserted that

"[a]lthough the necessary meters that can measure demand are close to being ubiquitous in UNSE's service areas, an education plan has not been formalized, nor have tools for managing load been made available. Thus, we concur with those parties who argue that this is not the time for this utility to require all residential and SGS customers to transition to mandatory three-part rates." The Commission confirmed this position expressed in the ALJ Recommendation in a decision on August 11, 2016.

8

10

Q. Why do you say that Trico has no plan to educate its residential members about demand charges?

As I discussed in my direct testimony related to the Proposed Settlement, Trico has not
yet developed an education and outreach plan regarding residential demand charges, nor
has it provided compelling support for the educational value of the Proposed Settlement's
\$0/kW demand charge.³⁵ Trico has also offered contradictory and unclear responses
about whether the proposed \$0/kW residential demand charge is even intended to be part
of its plan for educating residential members about demand charges.³⁶ In addition, Trico
has no estimate of the costs associated with development of the educational program.³⁷

18

19 Q. Has Trico explained how it will use a \$0/kW demand charge to provide customers with information and education regarding demand charges?

A. No. As stated above, Trico has not developed an education plan regarding residential demand charges; Trico therefore does not have a plan for how it will incorporate a \$0/kW demand charge into its member education program. In addition, Trico's testimony does not discuss why exactly a mandatory \$0/kW demand charge will provide members with a more effective educational tool than simply providing demand data and materials showing how an illustrative demand charge calculation would look. Instead, Trico's testimony only discusses the need to provide customers with information about their

³⁴ Docket No. E-04204A-15-0142. Recommendation of Administrative Law Judge Jane L. Rodda. July 20, 2016 (ALJ Recommendation), pp. 65-66. (see Exhibit WAM-2)

³⁵ Monsen Opening Settlement Testimony, pp. 23-24. See also Trico Response to EFCA DR 7.14 (see Exhibit WAM-1)

³⁶ Monsen Opening Settlement Testimony, pp. 21-22.

³⁷ Trico Response to EFCA DR 5.11(b). (see Exhibit WAM-1)

1 demand and to allow Trico to gather billing determinants for use in future ratemaking 2 activities.

3 4

Q. Please explain.

5 Mr. Hedrick states that "[t]he purpose of this initial demand charge is for use in educating Α. 6 the membership about demand rates and to provide Trico the necessary time to ensure 7 that all customers are metered appropriately and the billing systems are in place to effect 8 the billing demand to each customer. Having the demand component in rates – and 9 included in the Trico billing system – is important because it will accurately capture billing determinants for future rate cases."38 This is the extent of the discussion included 10 11 in Mr. Hedrick's testimony on behalf of Trico regarding why the Proposed Settlement's 12 \$0/kW demand charge is important. As is clear, Mr. Hedrick's testimony identifies no 13 actual purpose for the \$0/kW demand charge itself.

14

- 15 Will presenting the member's monthly peak demand in kW and the date and time Q. 16 of that peak demand on the member's monthly bill provide these members with 17 adequate information to respond to demand charges?
- 18 It likely will not. My direct testimony related to the Proposed Settlement discussed Α. 19 several reasons why residential customers may find demand charges confusing and why 20 they would need more information than simply the date, time, and magnitude of their peak demand to adequately respond to a demand charge.³⁹

22

21

- 23 Q. Does Trico acknowledge the potential difficulties that residential members may have 24 in understanding and responding to demand charges?
- 25 A. No. In fact, Trico appears to believe that residential members will easily be able to 26 understand and respond to demand charges despite Trico's current lack of an organized 27 education program and the limited information that Trico will be able to provide these 28 members about the cause of their demands.

29 30

Why do you say this? Q.

³⁸ Hedrick Settlement Testimony, p. 6.

³⁹ Monsen Opening Settlement Testimony, pp. 22-23

A. There are two reasons. First, Trico states that "[t]he demand billing kW to be shown on the customer's bill is an important component of the educational effort that will be undertaken with Trico members to demonstrate how demand rates work and what members can do to take full advantage of this rate design." It is not clear exactly what taking "full advantage of this rate design" means other than customers would act to try to minimize the likely increases in bills resulting from implementation of a three-part rate.

Second, Mr. Trico states that "[t]he demand charge is simply one additional billing component based on the customer's maximum peak consumption in a monthly billing period" and notes that such rates have been used for many years for commercial and industrial (C&I) customers. Trico glosses over the difficulties residential members face in adapting to demand charges and apparently assumes that residential customers will have a similar level of sophistication and understanding of utility rate matters as do commercial and industrial customers.

Q. Have you addressed these claims previously?

- A. Yes. My direct testimony regarding the Proposed Settlement discusses why the data that Trico will be able to provide to most residential members is inadequate to allow them to understand how to "take full advantage of this rate design" by responding to demand charges, and why residential members may find demand charges particularly difficult to understand and respond to.⁴²
 - 2. Trico metering and billing infrastructure is such that Trico cannot presently provide effective education and information regarding demand charges to its residential members
- Q. Does Trico presently have the metering and billing infrastructure in place to bill all residential members for demand charges?
- A. No. Trico acknowledges this, stating that one purpose of the Proposed Settlement's \$0/kW demand charge is "to provide Trico the necessary time to ensure that all customers

⁴⁰ Hedrick Settlement Testimony, p. 7 (emphasis added)

⁴¹ Hedrick Settlement Testimony, p. 8

⁴² Monsen Opening Settlement Testimony, pp. 22-23 and 31-35.

are metered appropriately and the billing systems are in place to effect the billing of demand to each customer."⁴³ Notably, even after making these upgrades, Trico would still not be able to provide members with full information about their demand throughout the day. Instead, Trico would only be able to provide its members only a single data point per day unless Trico spends in excess of \$10 million to upgrade its metering infrastructure.⁴⁴

Q. Does this have implications for the process of educating members about demandcharges?

A. Yes. It demonstrates that Trico cannot immediately begin educating <u>all</u> of its residential members about demand charges at even a basic level. This is because some residential customers do not have the correct meters to allow Trico to measure and record their demand, meaning that Trico currently cannot even provide those customers with demand data.

A.

Q. What other concerns do you have with Trico's discussion of its billing and metering infrastructure?

Trico has not addressed how it will adequately teach residential members how to respond to demand charges absent the ability to provide these members with information about their demand in more than one interval per month. My direct testimony regarding the Proposed Settlement extensively discussed the shortcomings in Trico's metering and billing infrastructure with regard to implementing residential demand charges, particularly that Trico's current metering equipment is incapable of providing more than a single demand measurement each day for most residential customers. Given that there are on average 2,918 quarter-hour intervals each month, it would be very difficult for members to understand demand charges from the single measurement that most of Trico's infrastructure is capable of providing. The bottom line, as my direct testimony demonstrates, is that Trico cannot at this stage provide adequate education and

⁴³ Hedrick Settlement Testimony, p. 6.

⁴⁴ Monsen Opening Settlement Testimony, p. 34.

⁴⁵ Monsen Opening Settlement Testimony, pp. 31-35.

1		information regarding residential demand charges without significant new investments,
2		which Trico has not requested in this docket. ⁴⁶
3		
4	Q.	What do you recommend?
5	A.	The Commission should reject the Proposed Settlement's mandatory three-part rate
6		structure and direct Trico to maintain its current rate structure.
7		B. Trico's testimony indicates that it is premature to consider freezing its
8		residential TOU rate option
9	Q.	Why does Trico contend that it should freeze its residential TOU rate option?
10	A.	Trico states that the current wholesale pricing structure from AEPCO, Trico's primary
11		power supplier, includes a fixed charge for capacity that does not vary based on the
12		volume or timing of energy consumed. Trico argues that due to this pricing structure, its
13		residential TOU rate "is not an effective rate and does not provide customers a
14		meaningful opportunity to reduce costs while at the same time reducing the costs incurred
15		by the cooperative. ⁴⁷
16		
17	Q.	It is possible that the pricing structure for Trico's agreement with AEPCO could
18		change in the future?
19	A.	Yes. Prior to 2011, AEPCO charged Trico based on a demand rate at the time of
20		AEPCO's peak. ⁴⁸ In addition, Trico acknowledges that AEPCO could change its pricing
21		structure in the future. ⁴⁹
22		
23	Q.	Do you agree that Trico's residential TOU rate option is not an effective rate and
24		would not allow residential customers to reduce their costs along with Trico's costs?
25	A.	No. First, as discussed in my direct testimony regarding the Proposed Settlement, costs
26		other than generation purchases do have a time component to them and could be
27		incorporated into TOU rates. ⁵⁰ Second, Trico has not provided any reason to assume that
28		its residential members will understand and respond to demand charges. If Trico's

Trico Response to EFCA DR 7.22d. (see Exhibit WAM-1)
 Hedrick Settlement Testimony, p. 10.
 Trico Response to EFCA DR 7.4. (see Exhibit WAM-1)
 Trico Response to EFCA DR 7.25. (see Exhibit WAM-1)
 Monsen Opening Settlement Testimony, pp. 38-39.

residential customers understand and respond to the TOU rate, but not the demand rate, a

TOU rate would clearly be a more meaningful option to reduce costs for both Trico and
members compared to a demand rate. Third and possibly more importantly, Trico
continues to offer TOU rate options for its non-residential customers and has not
proposed to freeze those tariffs with the goal of terminating the rate as it has suggested it
will do for its residential TOU rate.

7 8

Q. What other TOU rates does Trico offer?

9 A. Trico offers a TOU rate to its agricultural pumping customers.⁵¹ This tariff is used by
10 about a third of Trico's pumping members. In addition, Trico offers an experimental
11 TOU rate to its commercial and industrial customers currently taking service under
12 Schedules GS1, GS2, or GS3.⁵² This tariff has a coincident demand charge that is based
13 on the time of peak on the Arizona Electric Power Cooperative, Inc.'s peak; it is limited
14 to 100 customers.

15

16

17

Q. How have customers responded to the availability of these non-residential TOU tariffs?

A. The following table presents information about the number of accounts and the usage by members taking service under Trico's existing TOU tariffs and Trico's non-TOU rate options for those members:

⁵¹ See "Schedule TOD – P: Time Of Day Pumping Service." (see Exhibit WAM-3)

⁵² See "Schedule GS-TOU: General Service Time of Use – Experimental." (see Exhibit WAM-4) This tariff has a coincident demand charge that is based on the time of peak on the Arizona Electric Power Cooperative, Inc.'s peak.

Table 1: Comparison of TOU and Non-TOU Tariffs for Non-Residential Customers

Tariff	Average Customers	Average Monthly kWh Sold	
GS1 – 1Ph	1,366	570	
GS1 – 3Ph	122	871	
Subtotal GS1	1,488	595	
GS2 – 1Ph	98	2,274	
GS2 – 3Ph	153	4,456	
Subtotal GS2	251	3,582	
GS3 – 1Ph	117	6,319	
GS3 – 3Ph	302	28,865	
Subtotal GS3	419	22,587	
GS TOU	11	9,820	
Water Pumping-1Ph	11	1,414	
Water Pumping-3Ph	48	5,503	
Subtotal Water Pumping	59	4,703	
ToD Pumping-1Ph	2	14,741	
ToD Pumping-3Ph	27	16,470	
Subtotal ToD Pumping	29	16,451	

Source: Trico Schedule H-1.0 (see Exhibit WAM-5)

As can be seen from Table 1, the majority of energy sold to agricultural pumping customers is sold under Trico's TOU rate. Also, it seems likely that the largest pumping customers take service under Trico's TOU rate because the per-customer usage for the TOD customers is much larger on average than usage for Trico's non-TOU pumping customers. In addition, while many fewer customers take service under Trico's C&I TOU rate than under non-TOU rates, the customers taking service under GS-TOU are, on average, using more energy per month than all other customers in the General Service class except for customers taking 3-phase service on Schedule GS3.

2	Q.	What do you conclude from this?	
3	A.	I conclude that at least Trico's agricultural pumping customers and possibly some GS1,	
4		GS2, and/or GS3 customers find benefits from taking service under a TOU tariff. Thus, it	
5		is difficult to understand why Trico claims that residential customers would be unable to	
6		also benefit from TOU rates.	
7			
8	Q.	Has Trico proposed to freeze the TOU tariffs for its non-residential customers?	
9	A.	I am unaware of a proposal by Trico to freeze these non-residential TOU tariffs, despite	
10		the fact that that AEPCO eliminated its demand rate in 2011 and Trico's own admission	
11		that "[n]one of these Trico time differentiated energy tariffs currently provide a benefit to	
12		the system". ⁵³	
13			
14	Q.	What do you conclude from this?	
15	A.	Since Trico is not proposing to freeze its non-residential TOU tariffs, then evidently	
16		Trico must believe that they are somehow beneficial, either as a customer service option	
17		or to reduce Trico's costs. For those reasons, it is not clear why Trico claims that	
18		residential TOU rates are not similarly beneficial to Trico. Therefore, it appears that	
19		Trico is selectively freezing its residential TOU rate but not freezing its non-residential	
20		TOU rates.	
21			
22	Q.	What do you recommend?	
23	A.	Consistent with my direct testimony regarding the Proposed Settlement, I recommend	
24		that the Commission reject the Proposed Settlement related to the premature freezing of	
25		the residential TOU tariff and consider directing Trico to conduct a pilot study of	
26		residential TOU adoption and marketing effectiveness.	
27		C. Trico's testimony addressing Robert Hall's direct testimony regarding the	
28		implementation of demand charges is misleading	
29			

⁵³ Trico Response to EFCA DR 7.4. (see Exhibit WAM-1)

Q. What does Trico state with regard to Mr. Hall's testimony?⁵⁴

A. Trico states that the Settlement Agreement "addresses most of Mr. Hall's concerns."⁵⁵
With regard to demand charges in particular, Trico states that "Mr. Hall also supports
analyzing member demand information and providing outreach and education prior to
implementing demand rates, consistent with Trico's commitment in the Settlement
Agreement."⁵⁶

7

1

Q. Does Trico provide a citation or other reference to where in Mr. Hall's direct testimony he makes these statements?

10 A. No.

11

12 Q. What does Mr. Hall's testimony state with regard to implementing a residential demand charge?

A. Mr. Hall states that "[i]f TRICO... wants to educate members about the possibility of the introduction of a future real peak demand charge and the resulting implications to member bills, then their present proposal to include the peak demand (kW) that each member required in a given month and the resulting cost implication based on a \$/kW charge rate could be useful for the future evaluation regarding this form of charging rate." ⁵⁷

20

21

22

Q. Is Trico proposing to educate customers about the possibility of the introduction of a demand charge in the future?

A. No. The Proposed Settlement would plainly implement residential demand rates prior to
Trico actually analyzing member demand information and providing outreach and
education. Trico itself acknowledges that the Proposed Settlement would implement a
demand charge, stating that "[t]he settlement rate for Residential is a three-part rate
design that includes a monthly basic service charge, a demand charge and an energy
charge." Furthermore, as discussed in my direct testimony regarding the Proposed

⁵⁴ Direct Testimony of Robert B. Hall, Trico Electric, Member. Docket No. E-01461A-15-0363. May 18, 2016. (Hall Testimony)

⁵⁵ Nitido Settlement Testimony, p. 16.

⁵⁶ Nitido Settlement Testimony, p. 16.

⁵⁷ Hall Testimony, p. 13 (emphasis added).

⁵⁸ Hedrick Settlement Testimony, p. 4.

1		Settlement and elsewhere in this testimony, Trico has not yet even developed an
2		education plan regarding residential demand charges or upgraded its billing infrastructure
3		such that it can track and record demand data for many residential customers, 59 so it is
4		clear that Trico has not yet educated its customers about demand charges. Thus, the
5		Proposed Settlement would not do what Trico's testimony claims it would do.
6		
7	Q.	Does Mr. Hall contend that residential customers will understand and respond to a
8		demand charge?
9	A.	No. To the contrary, Mr. Hall states that residential customers may have difficulty
10		understanding demand charges, observing that:
11		
12		[a] Peak Demand Charge is based on a customer's Peak Demand, which is the
13		maximum energy used (in kWh) in a defined time interval (most typically, 15
14		minutes, 30 minutes or one hour) during a given billing month. The major
15 16		residential contributors to peak demand are the higher power drawing loads (kW), for example air conditioners, clothes dryers, washing machines, dishwashers,
17		furnace blowers, and hair dryers. Each of these power draws, or combinations of
18		them, may be on for tens of minutes, or more, during the defined time interval
19		used to determine Peak Demand The utilization of a Peak Demand Charge is
20 21		far from transparent. Customers generally have a reasonable idea of how to
22		"control" their bill based on kWh numbers. However, even if peak Power Demand (kW) might be understood, it is not clear how to manage that number as
23		it relates to their bill. ⁶⁰
24		
25	Q.	Does Mr. Hall contend that a demand charge is essential in order for rates to
26		address system peak demand?
27	A.	No. Mr. Hall states that "[a] well-designed residential Time of Use (TOU) billing option
28		provides customers the opportunity to impact their bill based on a TOU rate schedule.
29		This billing mechanism can be employed by the customer to effectively 'manage' peak
30		demand times to favorably impact (i.e. reduce) the system peak demand of the utility."61
31		In other words, Mr. Hall appears to recognize the value of TOU rates.
32		
33	Q.	Are Mr. Hall's statements with regard to demand charges and TOU rates consistent

with the Proposed Settlement's rate design?

<sup>Monsen Opening Settlement Testimony, pp. 20-36.
Hall Testimony, p. 13.
Hall Testimony, p. 14.</sup>

1	A.	No. As discussed elsewhere in my testimony, the Proposed Settlement would implement
2		a residential demand charge and freeze Trico's residential TOU tariff with the intent to
3		eliminate it in this docket. Thus, contrary to Trico's assertions, the Proposed Settlement
4		would not address Mr. Hall's concerns.
5		
6	Q.	What do you recommend?
7	A.	The Commission should note that Trico's reference to Mr. Hall's direct testimony is
8		misleading and that the Proposed Settlement would not address the residential rate design
9		concerns raised by Mr. Hall.
10	V.	Trico Does Not Justify Why it Would be Appropriate for the
11		Proposed Settlement to Significantly Change its Net Metering
12		Rules Prior to the Commission Issuing a Final Decision in the
13		Value of Solar Docket
14	Q.	Has Trico provided sufficient justification to support the Proposed Settlement's DG
15		buyback rate and approach for incorporating the results of the Commission's Value
16		of Solar docket?
17	A.	As discussed in detail below, I do not believe that Trico has provided compelling
18		evidence supporting an approach other than that articulated in the recent decision issued
19		by the Commission in the UNSE General Rate Case. Trico has provided no justification
20		for arbitrarily adopting a new DG buyback rate now without fully considering all issues
21		related to the value of solar DG, as is being done in the Value of Solar docket.
22		A. Trico does not justify preempting the outcome of the Value of Solar docket,
23		thereby unnecessarily creating rate instability, costs, and uncertainty
24	Q.	Would the Proposed Settlement's DG export rate be subject to change prior to
25		Trico's next rate case?
26	A.	Yes. According to Trico, "Commission Staff and Trico have agreed to support that the
27		general rate case remain open for 18 months following the decision, for possible

1		modification of the export rate at either parties' discretion, following the establishment of
2		one or more methodologies in the ongoing value of solar docket."62
3		
4	Q.	Would any party be able to request modification of the export rate once a decision
5		has been issued in the value of solar docket?
6	A.	No. Trico's testimony is clear that only Trico and Staff would be able to request
7		modification of the export rate. I discussed this issue at length in my direct testimony
8		regarding the Proposed Settlement. ⁶³
9		
10	Q.	What other concerns do you have with the Proposed Settlement's approach to
11		revising new DG buyback rates?
12	A.	As discussed in my direct testimony regarding the Proposed Settlement, this approach is
13		contrary to the recent ALJ Recommendation in the UNSE General Rate Case with regard
14		to incorporating the results of the value of solar docket and would create unnecessary rate
15		instability and uncertainty.64 The recent decision by the Commission in that docket
16		confirmed the ALJ Recommendation's position. In addition, it is unreasonable to
17		authorize Trico to spend money implementing a proposal that will likely be modified,
18		perhaps significantly, within 18 months. Neither Trico nor Staff have provided
19		compelling justification for adopting the Proposed Settlement's approach rather than
20		following the Commission's decision in the UNSE General Rate Case and considering
21		this issue in a second phase of this proceeding once the Commission has issued a final
22		decision in the Value of Solar docket.
23		
24	Q.	What do you recommend?
25	A.	Consistent with my direct testimony regarding the Proposed Settlement, I recommend
26		that the Commission should reject the Proposed Settlement's changes to Trico's DG
27		export rate and approach to incorporating the results of the value of solar docket, and
28		instead rule that:
29		i. All NEM and DG customer rate design issues shall be considered in a

30

second phase of this proceeding;

 ⁶² Nitido Settlement Testimony, p. 10 (emphasis added).
 ⁶³ Monsen Opening Settlement Testimony, pp. 42-45.
 ⁶⁴ Monsen Opening Settlement Testimony, pp. 42-45.

1		ii. No changes to NEM or DG customer rates sha	all be adopted until a final
2		decision has been issued in Phase 2 of this pro-	oceeding;
3		iii. All customers requesting an interconnection a	greement between now
4		and the issuance of a final decision in Phase 2	of this proceeding will be
5		grandfathered onto current NEM and DG rate	s, including their current
6		rate design; and	
7		iv. Phase 2 of this proceeding will explicitly inco	rporate the results of the
8		Value of Solar docket. ⁶⁵	
9		B. Trico does not adequately justify the Proposed Settle	ement's new DG buyback
10		rate of \$0.077/kWh	
11	Q.	How has Trico supported the Proposed Settlement's new D	G buyback rate of
12		\$0.077/kWh?	
13	A.	Trico has stated that it is a compromise rather than providing e	vidence that this is an
14		appropriate value for exports delivered by DG members.66	
15			
16	Q.	Has Trico adequately explained how the Proposed Settleme	ent's DG buyback rate
17		would impact its members' ability to deploy solar DG econo	omically?
18	A.	Trico acknowledges that "the 'payback' period for rooftop syst	ems may increase slightly
19		under the Settlement Agreement as compared to today's paybac	ck period,"67 but also
20		claims that "the payback period will still be significantly shorted	er than it was in the near
21		past."68 Trico concludes that these statements demonstrate that	the Proposed Settlement
22		would not adversely impact solar DG in the Trico service territ	ory. ⁶⁹ However, aside
23		from these conclusory statements, Trico has not presented any	analysis or forecasts of
24		future solar deployment in support of these statements. Instead,	Trico simply compares
25		Trico's rates to a different utility's rates in a misleading manne	r, as I will discuss below,
26		and references a different, unrelated solar subsidy that Trico pro-	eviously offered and
27		eliminated. ⁷⁰	

<sup>Monsen Opening Settlement Testimony, pp. 6-7.
Hedrick Settlement Testimony, p. 12.
Nitido Settlement Testimony, p. 15.
Nitido Settlement Testimony, p. 15.
Nitido Settlement Testimony, p. 14.
Hedrick Settlement Testimony, pp. 14-15.</sup>

1		1. Trico inappropriately compares an average credit based on the
2		Proposed Settlement's DG buyback rate and base rates to Tucson
3		Electric Power's (TEP's) base rates
4	Q.	On what basis does Trico claim that the Proposed Settlement's buyback rate is a
5		reasonable value for its members?
6	A.	Trico states that its estimate of the average compensation for DG energy "is essentially
7		equivalent to the total energy component of the Tucson Electric Power (TEP) Residential
8		rate and adders that is provided to DG customers in conjunction with TEP's net metering
9		policy. Therefore, under the Settlement Agreement, the payback period for Trico
10		members will still be equivalent to residential customers in TEP's service area."71
11		
12	Q.	Why does it matter that Trico has estimated total compensation to be comparable to
13		TEP's energy rates?
14	A.	Trico states that "[m]aintaining parity with TEP with respect to the total compensation
15		provided to new DG customers is very important to ensure that neither utility is perceived
16		as providing a greater value for DG customer installations than the other."72
17		
18	Q.	Do you agree that Trico must maintain parity with TEP with respect to DG
19		compensation?
20	A.	No. Trico has made clear that its system and its associated cost of service is different
21		from TEP's, stating that it serves a territory with a higher cost of service than Arizona's
22		investor-owned electric utilities. ⁷³ Thus, there is no reason to assume that Trico should
23		serve customers under identical or similar rates to other utilities. Similarly, there is no
24		reason to believe that Trico's DG compensation should be comparable to that provided
25		by TEP.
26		
27	Q.	Are there other reasons why comparing Trico's rates to TEP's rates is
28		inappropriate?
29	A.	Yes. Most notably, the primary reason that Trico has identified for filing this rate case is
30		unrelated to TEP's or any other utility's rates and/or the relationship of those rates to

Hedrick Settlement Testimony, p. 14.
 Hedrick Settlement Testimony, pp. 14-15.
 Nitido Settlement Testimony, p. 2.

Trico's. Trico has stated that "[t]he principal reason for Trico's rate case is to address increasing inequities regarding who pays for the use of Trico's electric grid. Trico believed [sic] that its rate proposals would lead to more equitable and sustainable rates for its Members." Any alleged inequities in allocating costs and proposals attempting to set more equitable and sustainable rates are internal to Trico and are unrelated to TEP or any other utility.

Q. What do you recommend?

- A. The Commission should give Trico's comparison of its rates to TEP's no weight and evaluate the Proposed Settlement on its own merits, particularly with regard to the impact on Trico's members. As discussed further in other sections of my testimony, Trico has not demonstrated that the Proposed Settlement's DG buyback rate would equitably address its costs, and has not demonstrated why it would be acceptable for the Proposed Settlement to create unnecessary rate instability and uncertainty with regard to Trico's DG buyback rate.
 - 2. Trico's buyback rate gives no credit for deferral of transmission and distribution infrastructure
- Q. Has Trico explained the basis for determining the Proposed Settlement's DG buyback rate of \$0.077/kWh
- A. Yes. According to Trico, "[t]he export rates [sic] is a compromise amount that is equivalent to the power supply portion of the energy charge for the first tier of the proposed RS1 rate." Trico also explains that \$0.077/kWh "reflects a compromise amount that is roughly halfway between Trico's avoided cost (wholesale fuel and energy) of \$0.03662 per kWh and the full first block RS1 retail rate of \$0.11293." 76

Q. Why does the Proposed Settlement use \$0.077/kWh, the RS1 first energy block power supply rate, as the DG buyback rate rather than the second energy block power supply rate?

⁷⁴ Nitido Settlement Testimony, p. 2.

⁷⁵ Hedrick Settlement Testimony, p. 12.

⁷⁶ Hedrick Settlement Testimony, p. 12.

1	A.	Trico states that given that the average RS1 customer has monthly consumption of 836
2		kWh, "the power supply component for the first block is fairly representative for the
3		average residential customer."77
4		

45

Q. Do you agree with Trico's rationale for determining the DG buyback rate?

A. No. First, it is unclear why Trico would not at a minimum use a weighted average RS1 power supply rate, which would be slightly higher than \$0.077/kWh, since the average usage is 836 kWh/month, the first full block is for the first 800 kWh, and the Proposed Settlement's Schedule RS1 second block power supply rate is \$0.087/kWh. That is, the weighted average power supply costs would be based on the usage in both the first and second full blocks.

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Second, Trico has not justified adopting the first RS1 block power supply rate rather than the higher second block rate or Trico's base power cost of \$0.081711/kWh.⁷⁹ It is unclear why, if Trico compensates power exports from DG members at the first block rate, it would not also compensate members whose energy consumption reaches Trico's second block at the second block rate. This highlights the difficulty in setting an appropriate buyback rate prior to the Commission providing guidance as to the appropriate methodology in the Value of Solar docket.

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- Q. Does the Proposed Settlement's DG buyback rate include any value associated with avoided transmission and distribution capacity costs or other potential avoided non-power supply costs?
- A. No. Trico is clear that the DG buyback rate is based only on the power supply portion of its first residential rate block.⁸⁰

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Q. Has Trico justified why it only included the power supply portion of its residential energy charge?

⁷⁷ Hedrick Settlement Testimony, p. 12.

⁷⁸ Proposed Settlement, Attachment C, p. 1.

⁷⁹ Proposed Settlement, p. 4.

⁸⁰ Hedrick Settlement Testimony, p. 12.

A. No. As discussed in my direct testimony regarding Trico's Application⁸¹ and my direct testimony regarding the Proposed Settlement,⁸² the lack of consideration and analysis of these other potential values is particularly inappropriate given the fact that the Proposed Settlement's would preempt the outcome of the Value of Solar docket that is considering these issues in detail.

6

7 Q. What do you recommend?

A. As discussed in my direct testimony regarding the Proposed Settlement and earlier in this testimony, I recommend that the Commission reject the Proposed Settlement's new DG export rate and consider the appropriate DG export rate for Trico members in a second phase of this proceeding.⁸³

12 VI. Staff 's Analysis of Solar DG Economics is Flawed

- 13 Q. What is the purpose of this section of your testimony?
- 14 A. This section addresses Staff's economic analysis of investments in new solar DG systems
 15 as presented by Staff.⁸⁴ As discussed in more detail below, Staff uses unreasonable
 16 assumptions in its economic analysis and uses unrealistically low benchmarks for testing
 17 his results.
- 18 A. Summary of Staff's analysis of solar DG economics
- 19 Q. Please describe Staff's analysis of solar DG economics.
- 20 Staff used a model developed in the UNSE proceeding to examine the simple payback A. 21 and breakeven lease rate associated with investments in new solar DG systems. Staff 22 acknowledges that the assumptions used in the analysis are uncertain and that other 23 parties may have different assumptions. Staff looked at three alternative rate design and 24 NEM scenarios: (1) NEM based on the existing RS1 tariff, (2) Trico's initial proposal to 25 buy back all excess generation at its avoided costs, and (3) the Proposed Settlement, 26 where Trico would buy back all excess generation at \$0.077/kWh but would not maintain 27 NEM. For each scenario, Staff presented simple payback periods and Internal Rate of 28 Return (IRR). Staff then compared their results against what are allegedly reasonable

⁸¹ Monsen Opening Testimony, pp. 23-28 and 29-31.

⁸² Monsen Opening Settlement Testimony, pp. 41-42.

⁸³ Monsen Opening Settlement Testimony, pp. 6-7.

⁸⁴ Liu Settlement Testimony.

1		benchmarks for IRR derived from historic data: returns on 3-month Treasury Bills and
2		10-year Treasury Bonds, returns for the Standard & Poor's 500 (S&P 500), and different
3		home mortgage products.
4		
5	Q.	Did you evaluate solar economics in this docket?
6	A.	Yes. In my opening testimony, I evaluated the Annual Lease Savings, Break-Even Lease
7		Rate, Discounted Payback, and Simple Payback based on Trico's initial proposal. 85 The
8		model that I used in my analysis is similar to the model used by Staff in its testimony.
9		Thus, I am generally aware of the approach used in Staff's analysis although I have not
10		received workpapers from Staff supporting its modeling.
11		B. Staff uses unrealistic assumptions to support its economic analysis of the
12		impact of the Proposed Settlement
13	Q.	Did Staff use the same assumptions that you used in your opening testimony?
14	A.	Some of the assumptions were similar and some were different. However, since I have
15		not yet received the workpapers supporting Staff's analysis, I am not able to guarantee
16		that the assumptions are the same. ⁸⁶
17		
18	Q.	Did Staff respond to the discussion of the appropriate assumptions to be used to
19		analyze solar economics that you presented in your opening testimony?
20	A.	No. Staff made no mention of my assumptions in its testimony supporting the Proposed
21		Settlement.
22		
23	Q.	Did Staff justify the assumptions that were used in its testimony?
24	A.	No. Unlike in my testimony, Staff did not attempt to justify its assumptions. Instead, Staff
25		merely stated the assumptions used in the analysis. I would note that some of the
26		assumptions used in Staff's analysis have changed since Staff originally presented its
27		analysis in the UNSE General Rate Case. Staff provided no explanation as to why it
28		chose to change those assumptions.

Monsen Opening Testimony, pp. 10-18.
 Note that Staff's assumptions are summarized in its testimony. However, that does not guarantee that the models will produce similar results given the same input assumptions.

Q.	Are there particularly important assumptions for which you and Stail used
	different values?
A.	Yes, in particular, my analysis assumed a larger typical system size of 7.15 kW-DC and a
	higher system cost of \$3,600/kW-DC as cited in my opening testimony.87 These
	assumptions are much different from the system size and cost assumptions used by Staff,
	which are 5.10 kW-DC for an average customer and 6.85 kW-DC for a large customer,
	and \$2,750/kW-DC. ⁸⁸
Q.	What other assumptions used by Staff that concern you?
A.	I am concerned that Staff elected to use a 33-year IRR and solar system lifespan in this
	docket as opposed to the 20-year IRR and solar system lifespan Staff used in the UNSE
	docket. ⁸⁹ Staff provided no justification for such a change.
Q.	Did Staff's analysis assume any changes in future rate design?
A.	No. Staff assumed that rate design would remain the same in the future but that rates
	would escalate at 2.5% per year. 90
Q.	Do results under Staff's modeling assumptions over- or under-state the returns and
	payback to Trico members who install solar DG compared to those assumptions
	included in your opening testimony?
A.	I have not yet received Staff's workpapers, so I was unable to directly confirm the results
	under any of Staff's assumptions and scenarios relative to my previous analysis.
	However, given the differences in assumptions, I expect that Staff's modeling
	assumptions over-state the returns and payback to Trico members who install solar DG. I
	reserve the right to supplement my testimony once I have received and reviewed Staff's
	workpapers.
	Q.A.Q.A.

<sup>Monsen Opening Testimony, p. 13.
Liu Settlement Testimony, Schedule YL-1.
Liu Settlement Testimony, pp. 6-7 and Surrebuttal Testimony of Yue Liu, Docket No. E-04204A-15-0142.
February 19, 2016. pp. 9-10. (see Exhibit WAM-6)
Liu Settlement Testimony, p. 7</sup>

C. Staff uses unrealistic benchmarks to compare against its modeling results, thereby potentially misleading the Commission

- Q. Which benchmarks did Staff use for comparison against its modeling results?
- A. Staff discussed several benchmarks based on historic data in its testimony: returns on the S&P 500, yields on 3-month Treasury Bills and 10-year Treasury Bonds, and interest rates for 15- and 30-year fixed rate mortgages, and 5-year Adjustable-Rate Mortgages. 91 Staff states that "IRR can also be compared against the prevailing rate of return in the securities market or accepted discount rate [sic] which are reference points for customers. For a customer considering an investment in a rooftop solar system, if the IRR for the investment is higher than his/her (publicly unknown) but accepted discount rate, the investment is economically viable."92

A.

- Q. Do you agree with Staff's assertion that "Generally speaking, the higher the investment's IRR, the more desirable it is to undertake the investment from the customer's perspective."?⁹³
 - Not completely. While a higher IRR does imply that an investment is more desirable than an investment with a lower IRR, that doesn't necessarily mean that the customer will make either investment because the return is unacceptable relative to the risk associated with the investment. For example, the risk associated with a yields from a 3-month Treasury Bill or a 10-year Treasury Bond is very low due to the fact that these are among the safest investments available. The risk associated with the returns from S&P 500 is much higher. The IRR associated with a solar DG unit is less certain than the very safe Treasury Bills or Treasury Bonds because it is based on forecasts of future rates and system performance. The IRR for the solar DG investment becomes even more uncertain when customers face major changes in rate structure that could undermine these investments. Trico has already indicated that it would likely move to a three-part rate with a non-zero demand charge and a higher monthly charge, which would severely undercut the IRR associated with a solar DG investment. As a result, the minimum acceptable return (also known as the hurdle rate) for making an investment in solar DG

⁹¹ Yue Settlement Testimony, pp. 8-9.

⁹² Yue Settlement Testimony, p. 7 (emphases added).

⁹³ Yue Settlement Testimony, p. 7.

1		should be higher than the hurdle rate for making an investment in an asset with less
2		uncertainty in returns.
3		
4	Q.	Did Staff assess the relative risks associated with the different benchmarks that it
5		proposed to compare against Staff's estimate of IRR?
6	A.	No. Staff merely listed the historic return associated with the different benchmarks.
7		
8	Q.	Did Staff attempt to survey the types of returns required by market participants to
9		make investments in solar projects?
10	A.	No.
11		
12	Q.	Why is this a problem?
13	A.	Because Staff did not undertake such a survey, it is not clear that the estimated IRRs are
14		consistent with the types of returns required by investors in solar projects.
15		
16	Q.	Do you have other comments about Staff's comparison of the IRRs against its
17		proposed benchmarks?
18	A.	Yes. It is important to note that the benchmarks are not forecasts of future returns; they
19		are historic values. On the other hand, the estimate of IRR is a forecast. Thus, it is not
20		clear that the historic benchmarks are comparable with the forecasted values of IRRs
21		since Staff made no effort to ensure that the benchmarks were normalized to make them
22		more comparable with the forecasts of IRRs.
23		D. Conclusion: Commission should give little weight to Staff's comparison of IRF
24		against questionable benchmarks
25	Q.	What do you conclude from this?
26	A.	The Commission should give little weight in Staff's comparison of IRRs with its
27		collection of benchmarks. Staff's assessment is simplistic in that it did not assess the
28		appropriate risk-adjusted returns from benchmarks with similar risk profiles as an
29		investment in a solar DG system being installed in an environment with significant
30		regulatory and market risk.

1 VII. Conclusion

- 2 Q. Does this complete your rebuttal testimony regarding the Proposed Settlement?
- 3 A. Yes.

Table of Exhibits

Exhibit WAM-1: Trico Data Request Responses

This Exhibit includes Trico responses to EFCA DR 5.11, EFCA DR 5.12, EFCA DR 7.4, EFCA DR 7.14, EFCA DR. 722, EFCA DR 7.25

Exhibit WAM-2: Docket No. E-04204A-15-0142. Recommendation of Administrative Law Judge Jane L. Rodda

Exhibit WAM-3: Schedule TOD - P: Time Of Day Pumping Service

Exhibit WAM-4: Schedule GS-TOU: General Service Time of Use Experimental

Exhibit WAM-5: Trico Schedule H-1.0

Exhibit WAM-6: Surrebuttal Testimony of Yue Liu, Docket No. E-04204A-15-0142. February 19, 2016

Exhibit WAM-1: Trico Data Request Responses

This Exhibit includes Trico responses to EFCA DR 5.11, EFCA DR 5.12, EFCA DR 7.4, EFCA DR 7.14, EFCA DR. 722, EFCA DR 7.25

ENERGY FREEDOM COALITION OF AMERICA'S FIFTH SET OF DATA REQUESTS TO TRICO ELECTRIC COOPERATIVE, INC.

DOCKET NO. E-01461A-15-0363 July 20, 2016

EFCA 5.11: Please provide the information requested below related to Trico's proposed Member Education Program.

- a) What are the objectives of Trico's Member Education Program?
- b) What is the anticipated cost of Trico's Member Education Program? Please itemize anticipated costs.
- c) Has Trico started conducting outreach under its Member Education Program?
- d) Please provide a timeline of the Member Education Program implementation and roll-out. Please include costs and objectives for each phase.
- e) How does Trico anticipate it will educate members on how to "utilize demand rates to reduce monthly bills"?
- f) Which information from third parties does Trico anticipate utilizing to "help members to manage demand"?
- g) With regard to Trico's Smart Hub application:
 - 1. Please discuss the functions and usefulness of this application?
 - 2. How do customers access Smart Hub?
 - 3. How many customers currently use this service daily, monthly?
 - 4. What information and customer-specific data does Smart Hub provide to customers?
 - 5. What does Trico identify as the limitations to the Smart Hub application?
 - 6. How does Trico plan to modify the Smart Hub application to meet the objectives of its Member Education Program?

RESPONSE:

- a) See Section 10 of the Settlement Agreement. The member outreach and education will include: (a) the nature and operation of demand rates; (b) how members can utilize demand rates to reduce monthly bills; and (c) information on tools available from Trico and third parties to help members to manage demand (including Trico's Smart Hub® application). Trico's education materials will highlight technology solutions including programmable thermostats and load controllers as means that could be used to minimize demand charges and monthly bills.
- b) Trico has not yet formulated an estimated cost of the member outreach and education program. The Cooperative anticipates formalizing and implementing this program upon approval of the Settlement Agreement by the Commission.
- c) No
- d) Trico has not yet formulated a timeline.
- e) Trico's plan is not yet formulated.
- f) Trico may seek assistance from third part consultants and/or other rural

ENERGY FREEDOM COALITION OF AMERICA'S FIFTH SET OF DATA REQUESTS TO TRICO ELECTRIC COOPERATIVE, INC. DOCKET NO. E-01461A-15-0363 July 20, 2016

cooperative agencies.

g) (1) The Smart Hub application allows Members to make payments, view billing history, request payment extensions, monitor daily usage within the current billing period prior to billing. For Members with cell based meters' hourly usage data is available. Members can also view historical usage data, do usage comparisons between months, find average usage. Members can view and report outages, in addition, request notifications for outage updates. There is also a Contact Us via email for various reasons; budget billing request, mailing address change, request to disconnect a service, electronic transfer inquiry, Smart Hub and miscellaneous inquiries. (2) Members access Smart Hub from Trico's website trico.coop. An email and password are required for login. Smart Hub can also be accessed on Apple and Android mobile devices by downloading from the Apple Store and Google Play, email and password required for login. (3) Currently Trico has 21,324 active Smart Hub users. See the attached EFCA 5.11(g) related usage of Smart Hub. (4) In addition to the items in response 1 above, Members can also view personal account information, stored and auto payment methods (credit card and checking account information). (5) A computer, Apple or Android mobile device is required to access the application. (6) Trico will modify the application such that Members will be able to view their peak demand for the current billing month and previous months as well as the date and time it occurred. For Members with cell based meters' hourly peak demand information will be available.

RESPONDENT: Karen Cathers, Chief Operating Officer

ENERGY FREEDOM COALITION OF AMERICA'S FIFTH SET OF DATA REQUESTS TO TRICO ELECTRIC COOPERATIVE, INC.

DOCKET NO. E-01461A-15-0363 July 20, 2016

- EFCA 5.12: Please provide the information requested below related to Section 12.1 of Trico's Settlement Agreement. Please provide all supporting data, analyses, and any other related documentation. If in Excel format, please ensure that all formulas and links remain intact.
 - a) What is the rationale behind Trico's \$0/kW demand charge?
 - b) What is the basis for the \$0/kW rate?
 - c) Did Trico consider requesting authority to implement a demand charge pilot program rather than a \$0/kW demand charge? If yes, please discuss. If no, why not?
 - d) Has Trico conducted any customer surveys or related research regarding ratepayer opinion on demand charges?
 - e) Explain with particularity each way, if any, that Trico believes the \$0/kW demand charge will help educate its members about demand charges.

RESPONSE:

- a) To put in place a tariff that Trico members can reference with respect to demand information on their bill, in order to assist them in understanding how demand rates work and what their own demand profile looks like, without economic implication to the members pending an opportunity for Trico to analyze demand data for all residential and small commercial members and to conduct outreach and education regarding how members can utilize demand rates to reduce their bills. Including the demand element in the billing program also allows Trico to accurately track billing determinants related to demand and to easily utilize historical demand data to answer member questions.
- b) See a) above.
- c) Trico did not consider implementing a demand charge pilot program, as the Cooperative believes an elective pilot program would only apply to a small segment of the membership, and would not provide the Cooperative with system wide demand information nor with as good an opportunity to provide all of its residential and small commercial members with outreach and education regarding the operation of demand rates and how they can be used to lower a member's electric bill.
- d) No. Based on informal discussions with members at various Cooperative functions (town hall meetings, member events, annual meetings, etc.), Trico believes there is a level of confusion and uncertainty among the membership regarding demand rates and how they work. Trico believes the better approach from a Cooperative standpoint is to educate all of its members regarding demand rates while simultaneously analyzing demand data for the entire membership to determine whether and how to implement demand rates in the future.
- e) The \$0/kW demand charge is not intended to provide education about demand charges, it provides a tool and an opportunity for the member to receive education from the Cooperative and learn how demand rates work without economic consequences. See a) above.

ENERGY FREEDOM COALITION OF AMERICA'S FIFTH SET OF DATA REQUESTS TO TRICO ELECTRIC COOPERATIVE, INC. DOCKET NO. E-01461A-15-0363 July 20, 2016

RESPONDENT: Vincent Nitido, CEO/General Manager

ENERGY FREEDOM COALITION OF AMERICA'S SEVENTH SET OF DATA REQUESTS TO TRICO ELECTRIC COOPERATIVE, INC. DOCKET NO. E-01461A-15-0363 AUGUST 9, 2016

EFCA 7.4

Please explain why it is reasonable for Schedule TOD-P to have a timedifferentiated energy charge but is not reasonable for a residential or small commercial tariff to have a time-differentiated energy charge.

RESPONSE:

Prior to 2011, AEPCO charged Trico and its other Members based on a demand rate at the time of the AEPCO peak. When these rates, such as TOD-P, were developed Trico structured the time differentiation of the energy rates to move the Member to use less energy at AEPCO peak times which would result in lower demand charges from AEPCO. In 2011, the AEPCO demand rates were eliminated and replaced with fixed charge dollars that do not change based on usage or time of that usage. All of Trico's time differentiated rates were developed before AEPCO made the change to eliminate its demand rates. None of these Trico time differentiated energy tariffs currently provide a benefit to the system, however those tariffs such as the TOD-P that have very few Members taking service do not have a significant cost impact.

RESPONDENT:

Karen Cathers, Chief Operating Officer

ENERGY FREEDOM COALITION OF AMERICA'S SEVENTH SET OF DATA REQUESTS TO TRICO ELECTRIC COOPERATIVE, INC. DOCKET NO. E-01461A-15-0363 AUGUST 9, 2016

EFCA 7.14 On page 8 of Mr. Nitido's testimony, he indicates that Trico

"anticipates" developing a comprehensive outreach and education program. Has work started on this effort? If not, how long does Trico

anticipate that this effort would take?

RESPONSE: No work has not started yet. Trico plans to develop the program in

parallel with its metering and billing software upgrades which will occur over 6 months after ACC approval of the Rate Case. See also the

Response to EFCA 5.11.

RESPONDENT: Karen Cathers, Chief Operating Officer

ENERGY FREEDOM COALITION OF AMERICA'S SEVENTH SET OF DATA REQUESTS TO TRICO ELECTRIC COOPERATIVE, INC. DOCKET NO. E-01461A-15-0363 AUGUST 9, 2016

EFCA 7.22

On page 7 of Mr. Hedricks' testimony, he states that "The majority of Trico's Residential customers currently have metering installed that will accommodate demand metering." Please answer the following questions:

- a. Please define with specificity the meaning of "accommodate demand metering."
- b. Does this "majority" of customers have meters capable of metering hourly or quarter-hourly load data for each time interval in a month so that these data can be provided to customers?
- c. In order to provide residential customers with interval data for each quarter-hourly or hourly interval, would Trico have to replace its meters? If so, what would be the cost of replacing its meters? What other infrastructure and software would need to be replaced in order to allow Trico to provide interval data to all residential customers? How long would it take to specify, order, and install all of these meters? How long would it take to develop, test, install, and test a new billing system that could support presentation of interval load data?
- d. Has Trico requested funds in this general rate case to make this infrastructure upgrade? If not, when might it make such a request?

RESPONSE:

- a. All but approximately 1,350 of the Trico current meters can provide demand data. However, Trico's billing system will need to be configured to pull the demand data from the meter such that it can be collected for analysis and for billing.
- b. About a quarter to a third of Trico's meters currently provide interval data (all of these provide 15-minute interval data).
- c. Please see the Response to EFCA 5.7(f) and STF 2.11.
- d. No, Trico can only include in its rate case test year known and measurable costs. Any future plant that Trico constructs will be included in its next rate case.

RESPONDENT:

Karen Cathers, Chief Operating Officer

ENERGY FREEDOM COALITION OF AMERICA'S SEVENTH SET OF DATA REQUESTS TO TRICO ELECTRIC COOPERATIVE, INC. DOCKET NO. E-01461A-15-0363 AUGUST 9, 2016

EFCA 7.25

On page 10 of Mr. Hedricks' testimony, he discusses how the "current wholesale pricing structure from AEPCO" includes a fixed charge for capacity that does not vary based on the volume or timing of energy consumed. Please respond to the following questions:

- a. Does the AEPCO contract have a fixed charge that varies with maximum demand taken from customers? If the answer to this question is anything except for an unqualified "no," please provide a copy of the AEPCO contract and a summary of how the fixed charge varies with maximum demand.
- b. Has AEPCO ever offered to sell power to Trico at prices that vary with time of day or season? If so, please provide copies of all such offers.
- c. Does Mr. Hedricks believe that there is no way that AEPCO would change its pricing structure such that AEPCO's price would vary with time of day? If not, please so state.

RESPONSE:

a. No

b. Please see the Response to EFCA 7.4.

c. It is possible that AEPCO may change its pricing structure in the future but such a change would be complex and will likely require ACC approval through an AEPCO rate case.

RESPONDENT:

Karen Cathers, Chief Operating Officer

Exhibit WAM-2: Docket No. E-04204A-15-0142. Recommendation of Administrative Law Judge Jane L. Rodda

ORIGINAL

OPEN MEETING ITEM



COMMISSIONERS
DOUG LITTLE - Chairman
BOB STUMP
BOB BURNS
TOM FORESE



Executive Director

ARIZONA CORPORATION COMMISSION

JUL 20 P 4:

DATE:

JULY 20, 2016

DOCKET NO .:

E-04204A-15-0142

TO ALL PARTIES:

Enclosed please find the recommendation of Administrative Law Judge Jane L. Rodda. The recommendation has been filed in the form of an Opinion and Order on:

UNS ELECTRIC, INC. (RATES)

Pursuant to A.A.C. R14-3-110(B), you may file exceptions to the recommendation of the Administrative Law Judge by filing an original and thirteen (13) copies of the exceptions with the Commission's Docket Control at the address listed below by 4:00 p.m. on or before:

JULY 29, 2016

The enclosed is <u>NOT</u> an order of the Commission, but a recommendation of the Administrative Law Judge to the Commissioners. Consideration of this matter has <u>tentatively</u> been scheduled for the Commission's Open Meeting to be held on:

AUGUST 9 AND 10, 2016

For more information, you may contact Docket Control at (602) 542-3477 or the Hearing Division at (602) 542-4250. For information about the Open Meeting, contact the Executive Director's Office at (602) 542-3931.

Arizona Corporation Commission
DOCKETED

JUL 2 0 2016

JØDI A. ÆRICH

EXECUTIVE DIRECTOR

DOCKETED BY

1200 WEST WASHINGTON STREET; PHOENIX, ARIZONA 85007-2927 / 400 WEST CONGRESS STREET; TUCSON, ARIZONA 85701-1347

This document is available in alternative formats by contacting Shaylin Bernal, ADA Coordinator, voice phone number 602-542-3931, E-mail <u>SABernal@azcc.gov</u>.

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DECISION NO.

LFCR, which was intended to compensate the Company for the lost revenues associated with EE and DG. The LFCR collects these costs by means of a per kWh charge. Thus, residential customers pay more when sales decline. Low usage customers do not pay as much through the LFCR as others because the LFCR is based on kWh consumption.

Some parties in the this case have argued for the implementation of three-part residential rates, comprised of a fixed customer charge, a demand charge, and a volumetric energy charge, in order to better align cost recovery and cost causation. As they were recommended in this case, a demand charge would be incurred based on the highest one hour KW use during peak periods. Because the demand charge would recover some of the fixed costs associated with investment in capacity formerly being recovered in the energy charge, the energy charge portion of the rate is reduced. UNSE attempted to design the three-part rates in this case such that they would be revenue neutral, in that the customer using the average number of kWh's annually would see the same total bill for the month, but the revenues would be recovered partly from a new demand charge in addition to the basic customer charge and the energy charge.

Until recently, the technology to implement three-part rates for the residential class has not been widely available. UNSE, however, expects to have smart meters, able to measure demand, installed for all of its residential customers by the fall of 2016. We do not disagree with those who have argued in this case that a three-part rate design can better align revenue recovery with cost causation. However, the devil is in the details.

Demand charges, although used for many years in a commercial context, are a new concept for most residential customers. APS has had a voluntary residential demand charge for many years, which for certain customers, generally with high usage, has worked well, allowing them to save money. In order for customers to understand how demand charges work and how they can manage their energy consumption to save money, or at least not incur a bill increase, requires education and tools available to monitor their load. Although the necessary meters that can measure demand are close to being ubiquitous in UNSE's service areas, an education plan has not been formalized, nor have tools for managing load been made available.

Thus, we concur with those parties who argue that this is not the time for this utility to require

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all residential and SGS customers to transition to mandatory three-part rates. The public distrust or antipathy to the proposal has convinced the Company and the Commission that any transition to three-part rates will require a massive public education effort before we can say with any degree of certainty that mandatory residential demand rates in UNSE's service territory are in the public interest. This does not mean that another utility, under different circumstances, cannot make a convincing argument that mandatory residential demand charges can be in the public interest. Our decision in this case applies only to UNSE at this point in time.

Even though we do not approve mandatory residential or SGS demand rates, we believe that the time is ripe for a more modern rate design. Before turning to mandatory three-part residential rates, however, we find that the better, more tempered, path to modernity is to move as many customers as possible to TOU rates, while also promoting other rate options, including an optional three-part rate for the Residential and SGS Classes. Appropriately designed TOU rates should allow better recovery of costs, and send the correct signals about the cost of service and encourage customers to shift their loads to off-peak times. By shaving the peak, the utility and its ratepayers can save on investments in generation, transmission and capacity.

In general, we find that the various options offered by UNSE in its Initial Brief (a two-part rate, TOU, Super Peak TOU, three-part rate, and three-part TOU), modified to reflect the revenue allocations approved herein and other adjustments discussed below, are reasonable. In order to move as many residential and SGS customers as possible to TOU rates, we believe that the TOU option should be the default residential rate for existing as well as new customers. However, because we do not yet have rate proposals that reflect the conclusions of this Order, and because transitioning to default TOU rates will take planning and education, there must be a transition period.

Thus, we authorize a traditional two-part rate structure (including UNSE's proposed two-tier proposal for the energy charges) for a transition period of at least six months before residential customers will be placed on the TOU options. During the transition period, UNSE shall compile and submit a transition plan for review by Staff and RUCO (and any other interested party to this docket) and Commission approval. The transition plan shall include the proposed transition date, and specific educational materials to inform customers about TOU rates and how they can manage their bills under

Exhibit WAM-3: Schedule TOD – P: Time Of Day Pumping Service

ELECTRIC RATES

TRICO ELECTRIC COOPERATIVE, INC.

8600 W. Tangerine Road Marana, Arizona 85653

Filed by:

Vincent Nitido

Title:

CEO/General Manager

Effective Date: September 1, 2005

STANDARD OFFER TARIFF

SCHEDULE TOD - P TIME OF DAY PUMPING SERVICE

Availability

In the Cooperative's Certificated Area where its facilities are of adequate capacity and the required phase and suitable voltage are in existence and are adjacent to the premises served.

Application

The Time of Day Pumping Service Rate (TODP) is applicable to all water pumping installations of ten (10) horsepower pumps or larger. All service to an installation shall be delivered at a single service location. The Cooperative shall have the right to meter in the most practical manner, either primary or secondary voltage.

Type of Service

The type of service available under this schedule will be determined by the Cooperative and will normally be:

120/240 volt single phase, 120/208 volt three phase or 277/480 volt three phase

Monthly Rate

		Distribution Charges					
TIME OF DAY RATE	Power Supply	Metering	Meter Reading	Billing	Access	Total	Total Rate
Customer Charge (\$/Customer/Mo) Single-Phase Three-Phase		\$5.35 \$5.35	\$1.62 \$1.62	\$6.21 \$6.21	\$ 4.82 \$12.82	\$18.00 \$26.00	
Billing Demand (\$/kW) On Peak	\$18.16						\$18.16
Energy Charge(\$/kWh) On-Peak Off-Peak	\$0.10040 \$0.03540				\$0.02650 \$0.02650	\$0.02650 \$0.02650	\$0.12690 \$0.06190

TIME OF DAY PUMPING SERVICE SCHEDULE TODP

Definition of On-Peak

April 1 through October 31: For this rate schedule, on-peak hours are 1:00 p.m. to 9:00 p.m., Monday through Friday. All other hours, including Saturday, Sunday and *holidays, are considered to be Off-Peak.

November 1 through March 31: For this rate schedule, on-peak hours are 6:00 a.m. to 10:00 a.m., and 6:00 p.m. to 10:00 p.m., Monday through Friday. All other hours, including Saturday, Sunday and *holidays, are considered to be Off-Peak.

Metering Cost

The customer shall pay the Cooperative, prior to installation, any cost for the Time-of-Day Energy and Demand Meter, which cost exceeds the metering cost that would be incurred by the Cooperative for such a pumping installation without a Time-of-Day Meter.

Minimum Monthly Charge

The greater of the following, not including any wholesale power cost adjustor or any other adder approved by the Arizona Corporation Commission:

- 1. The Customer Charge;
- 2. \$1.00 per kVA of required transformer capacity;
- 3. The amount specified in the written contract between the Cooperative and the customer

Tax Adjustment

To the charge computed in this rate schedule, including all adjustments, shall be added the applicable proportionate part of any taxes or governmental impositions which are or may in the future be assessed on the basis of gross revenues of the Cooperative and/or the price or revenue from the electric energy or service sold and/or the volume of energy purchased for sale and/or sold hereunder.

Wholesale Power Cost Adjustment

The Cooperative shall, if purchased power cost is increased or decreased above or below the base purchased power cost of \$0.081638 per kWh sold, flow through such increases or decreases to all classes of customers.

In addition to the foregoing, all kWh sold to each customer under this rate schedule shall be subject to an additional temporary wholesale power cost adjustment, if any, that may be charged the Cooperative by its supplier of electricity which consists of an additional surcharge, a temporary credit and/or a fuel bank surcharge.

Rules and Regulations

The Rules and Regulations and Line Extension Policies of the Cooperative as on file with the Arizona Corporation Commission shall apply to this rate schedule.

Upon application for service or upon request, the Cooperative will assist the customer in selecting the rate schedule best suited to his requirements, but the Cooperative does not guarantee the customer will be served under the most favorable rate schedule. Upon written notification of any material changes in the customer's installation, load conditions or use of service, the Cooperative will assist in determining if a change in rates is desirable. No more than one (1) such change at the customer's request will be made within any twelve (12) month period.

TIME OF DAY PUMPING SERVICE SCHEDULE TODP

Contract

If service is requested in the Cooperative's Certificated Area and the provisions outlined in the Availability Clause of this rate tariff cannot be met, it will be necessary for the Cooperative and customer to mutually agree, in a written contract, on the conditions under which service will be made available.

Service Availability Charge

A Service Availability Charge to be paid by the customer to the Cooperative may be included in the contract to reimburse the Cooperative for its operating expenses with regard to idle or standby services in connection with the facilities constructed or installed pursuant to the contract based upon the Cooperative's estimate of its actual operating costs for such idle or standby services.

Renewable Energy Standard (RES) Surcharge

The Cooperative shall add to its bill a RES Surcharge in accordance with the approved RES tariff to help offset the costs associated with the Cooperative's programs designed to promote alternative generation requirements that satisfy the RES as approved by the Arizona Corporation Commission. Other charges may be applicable subject to approval by the Arizona Corporation Commission.

Demand Side Management (DSM) Programs; DSM Adjustment Mechanism

The Cooperative shall recover its cost for pre-approved DSM programs through a separate DSM adjustment mechanism which shall provide for a separate and specific accounting for pre-approved DSM costs.

Definition of Holidays

Holidays are defined as New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day.

TIME OF DAY PUMPING SERVICE SCHEDULE TODP

Exhibit WAM-4: Schedule GS-TOU: General Service Time of Use Experimental

ELECTRIC RATES

TRICO ELECTRIC COOPERATIVE, INC.

8600 W. Tangerine Road Marana, Arizona 85653

Filed By: Vincent Nitido

Title: General Manager/CEO

Effective Date: August 1, 2009

STANDARD OFFER TARIFF

GENERAL SERVICE TIME OF USE - EXPERIMENTAL SCHEDULE GS-TOU

Availability

In the Cooperative's Certificated Area where its facilities are of adequate capacity and the required phase and suitable voltage are in existence and are adjacent to the premises served. This rate is limited to the first 100 qualified customers.

Application

The General Service Time of Use Rate – Experimental (GS-TOU) is applicable for single and three phase service for any customer who would otherwise be eligible for either the General Service 1 (GS1), General Service 2 (GS2) or General Service 3 (GS3) rate. All service shall be delivered at a single service location. The Cooperative shall have the right to meter in the most practical manner, either primary or secondary voltage.

Type of Service

The type of service available under this schedule will be determined by the Cooperative and will normally be:

120/240 volt single phase, 120/208 volt three phase or 277/480 volt three phase

Monthly Rate

CT AND ADD DATE	D	Distribution Charges					
STANDARD RATE	Power Supply	Metering	Meter Reading	Billing	Access	Total	Total Rate
Customer Charge (\$/Customer/Mo) Single-Phase Three-Phase		\$9.35 \$9.35	\$1.62 \$1.62	\$6.21 \$6.21	\$6.82 \$14.82	\$24.00 \$32.00	\$24.00 \$32.00
Billing Demand (\$/kW/Month)	\$0.00			-	\$5.95	\$5.95	\$5.95
Coincident Demand Charge* (\$/kW/Month)	\$29.50				\$0.00	\$0.00	\$29.50
Energy Charge (\$/kWh)	\$0.03749				\$0.02626	\$0.02626	\$0.06375

^{*} The Coincident Demand Charge is applied to the customer's monthly metered demand as recorded by suitable metering device at the time of the Arizona Electric Power Cooperative, Inc. (AEPCO) peak.

STANDARD OFFER TARIFF

GENERAL SERVICE TIME OF USE - EXPERIMENTAL SCHEDULE GS-TOU

Minimum Monthly Charge

The greater of the following:

- 1. The Customer Charge;
- 2. \$1.00 per kVA of required transformer capacity;
- 3. The amount specified in the written contract between the Cooperative and the customer.

Power Factor

The customer shall maintain power factor of not less than ninety percent (95%) but not greater than unity. The Cooperative shall have the right to measure such power factor at any time. Should such measurement establish that the power factor of the customer is less than ninety percent (95%) or greater than unity, the customer shall upon 60 days written notice correct such power factor to ninety percent (95%) to unity. If not timely corrected, the Cooperative shall have the right to increase the kWh for billing purposes by one percent (1%) for each one percent (1%) of power factor below ninety percent (95%) or above unity.

Billing Demand

The billing demand shall be the maximum kilowatt demand established by the customer for any period of fifteen (15) consecutive minutes during the month for which the bill is rendered, as indicated or recorded by a suitable metering device, but not less than the highest billing demand in the previous eleven months.

Coincident Demand

The Coincident Demand is the customer's monthly metered demand as recorded by suitable metering device at the time of the AEPCO peak.

Primary Discount

The Cooperative reserves the right to refuse delivery of power at primary voltage to the customer. With the Cooperative's consent, however, delivery of power at primary voltage will be billed with a three percent (3%) discount given on all demand and energy charges.

Other Provisions

The customer will be provided by the Cooperative with information concerning historical AEPCO monthly peak dates and times.

Tax Adjustment

To the charge computed in this rate schedule, including all adjustments, shall be added the applicable proportionate part of any taxes or governmental impositions which are or may in the future be assessed on the basis of gross revenues of the Cooperative and/or the price or revenue from the electric energy or service sold and/or the volume of energy purchased for sale and/or sold hereunder.

STANDARD OFFER TARIFF

GENERAL SERVICE TIME OF USE - EXPERIMENTAL SCHEDULE GS-TOU

Wholesale Power Cost Adjustment

The Cooperative shall, if purchased power cost is increased or decreased above or below the base purchased power cost of \$0.081638 per kWh sold, flow through such increases or decreases to all classes of customers.

In addition to the foregoing, all kWh sold to each customer under this rate schedule shall be subject to an additional temporary wholesale power cost adjustment, if any, that may be charged the Cooperative by its supplier of electricity which consists of an additional surcharge, a temporary credit and/or a fuel bank surcharge.

Rules and Regulations

The Rules and Regulations and Line Extension Policies of the Cooperative as on file with the Arizona Corporation Commission shall apply to this rate schedule.

Upon application for service or upon request, the Cooperative will assist the customer in selecting the rate schedule best suited to his requirements, but the Cooperative does not guarantee the customer will be served under the most favorable rate schedule. Upon written notification of any material changes in the customer's installation, load conditions or use of service, the Cooperative will assist in determining if a change in rates is desirable. No more than one (1) such change at the customer's request will be made within any twelve (12) month period.

Contract

If service is requested in the Cooperative's Certificated Area and the provisions outlined in the Availability Clause of this rate tariff cannot be met, it will be necessary for the Cooperative and customer to mutually agree, in a written contract, on the conditions under which service will be made available.

Service Availability Charge

A Service Availability Charge to be paid by the customer to the Cooperative may be included in the contract to reimburse the Cooperative for its operating expenses with regard to idle or standby services in connection with the facilities constructed or installed pursuant to the contract based upon the Cooperative's estimate of its actual operating costs for such idle or standby services.

Renewable Energy Standard (RES) Surcharge

The Cooperative shall add to its bill a RES Surcharge in accordance with the approved RES tariff to help offset the costs associated with the Cooperative's programs designed to promote alternative generation requirements that satisfy the RES as approved by the Arizona Corporation Commission. Other charges may be applicable subject to approval by the Arizona Corporation Commission.

Demand Side Management (DSM) Programs; DSM Adjustment Mechanism

The Cooperative shall recover its cost for pre-approved DSM programs through a separate DSM adjustment mechanism which shall provide for a separate and specific accounting for pre-approved DSM cost.

Exhibit WAM-5: Trico Schedule H-1.0

TRICO ELECTRIC COOPERATIVE, INC.

ANALYSIS OF REVENUE BY DETAILED CLASS

	Average	Average Monthly	Total	Adjusted	Proposed		Percent
	Consumers	KWh Sold	kWh Sold	Revenue	Revenue	Change	Change
Residential	37,838	836	379,931,171	52.815.725	54,986,781	2,171,056	4 11%
Residential-TOU	2,793	1,058	35,449,872	4.446.579	4.796.920	350 341	7.88%
GS1 - 1Ph	1,366	570	9,355,588	1,559,607	1,627,973	68.366	4.38%
GS1 - 3Ph	122	871	1,276,535	210,252	216,088	5,836	2.78%
Substotal GS1	1,488	595	10,632,123	1,769,859	1,844,061	74.202	4.19%
GS2 - 1Ph	86	2,274	2,630,469	424,454	448,047	23,593	5.56%
GS2 - 3Ph	153	4,456	8,157,808	1,396,091	1,463,938	67.847	4.86%
Subtotal GS2	251	3,582	10,788,277	1,820,545	1,911,985	91,440	5.02%
GS3 - 1Ph	117	6,319	8,879,750	1,188,258	1,147,056	(41,202)	-3.47%
GS3 - 3Ph	302	28,865	104,685,742	13,838,193	13,280,357	(557,836)	-4.03%
Subtotal GS3	419	22,587	113,565,492	15,026,451	14,427,413	(599,038)	-3.99%
GS TOU	=	9,820	1,296,284	171,225	171,992	191	0.45%
GS4	2	1,694,897	101,693,786	7,243,143	7,243,143	0	0.00%
Water Pumping-1Ph		1,414	186,573	27,680	29,809	2,129	7.69%
Water Pumping-3Ph	4	5,503	3,143,032	437,041	468,726	31,685	7.25%
Subtotal Water Pumping	20	4,703	3,329,605	464,721	498,535	33,814	7.28%
Irrigation	=	1,982	261,544	38,364	41,231	2,867	7.47%
ToD Pumping-1Ph	7	14,741	353,776	22,852	24,511	1,659	7.26%
ToD Pumping-3Ph	27	16,470	5,371,245	599,043	621,209	22,166	3.70%
Subtotal ToD Pumping	29	16,451	5,725,021	621,896	645,720	23,825	3.83%
Interruptible - Comm	2	141,248	3,573,369	332,577	347,228	14,651	4.41%
Interruptible - Pumping	18	34,303	7,331,315	815,855	829,030	13,175	1.61%
Subtotal Interruptible	20	45,436	10,904,684	1,148,432	1,176,258	27,826	2.42%
Lighting	0	0	539,888	142,334	147,243	4,909	3.45%
Subtotal Energy Sales	42,924		674,117,747	85,709,274	87,891,282	2,182,008	2.55%
Supplemental Wheeling				150,365	150,365	0	0.00%
l otal Energy Sales				85,859,639	88,041,647	2,182,008	2.54%
Other Revenue				1,621,097	1,621,097	0	0.00%
Total Revenue				87,480,736	89,662,744	2,182,008	2.49%

Supporting Schedules: E-7.1, E-7.2, E-7.5, E-7.5.1

2, E-7.5, E-7.5.1

Schedule H-1.0

Exhibit WAM-6: Surrebuttal Testimony of Yue Liu, Docket No. E-04204A-15-0142. February 19, 2016

BEFORE THE ARIZONA CORPORATION COMMISSION

DOUGLITTLE
Chairman
BOB STUMP
Commissioner
BOB BURNS
Commissioner
TOM FORESE
Commissioner
ANDY TOBIN
Commissioner

IN THE MATTER OF THE APPLICATION OF UNS ELECTRIC, INC. FOR THE STABLISHMENT OF JUST AND REASONABLE RATES AND CHARGES DESIGNED TO REALIZE A REASONABLE RATE OF RETURN ON THE FAIR VALUE OF THE PROPERTIES OF UNS ELECTRIC, INC. DEVOTED TO ITS OPERATIONS THROUGHOUT THE STATE OF ARIZONA, AND FOR RELATED APPROVALS.

DOCKET NO. E-04204A-15-0142

SURREBUTTAL

TESTIMONY

OF

YUE LIU

PUBLIC UTILITIES ANALYST III

UTILITIES DIVISION

ARIZONA CORPORATION COMMISSION

FEBRUARY 23, 2016

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A.

Q. What are the resulting simple paybacks?

A. Simple payback is a straightforward measure of how many years a customer needs to recover the initial cost of purchasing a rooftop solar system through bill savings. Table 1 below summarizes the resulting simple paybacks for an Average Customer and a Large Customer.

	Simple Payba	ck (Years)
	Average Customer	Large Customer
Existing RES-01	9.2	9.2
Company Original Proposed RES-01 Demand	14.4	14.9
Company Original Proposed RES-01 TOU Demand	15.0	15.5
Company Rebuttel RES 01 TOU Demand	: 11 5	

Table 1: Resulting Simple Paybacks

The results suggest that, under the Existing RES-01, both the Average Customer and Large Customer can achieve a better simple payback. However, with the Company Rebuttal RES-01 TOU Demand, both customers have effective improvement in terms of simple payback, as compared to the Company Original Proposed RES-01 Demand and Company Original Proposed RES-01 Demand.

Q. What is the formula of the IRR?

The IRR is a financial metric used to evaluate the profitability of any potential investments.

The IRR is a discount rate that makes the net present value ("NPV") of all cash flows from a particular investment equal to zero. In the bill saving model, the IRR is calculated based on the formula below:

$$NPV = 0 = -C_0 + \frac{S_1}{1+IRR} + \frac{S_2}{(1+IRR)^2} + \cdots + \frac{S_{20}}{(1+IRR)^{20}},$$

where C_0 is the total initial cost of purchasing the rooftop solar system, and S_1 , S_2 , ..., S_{20} are the annual bill savings during the period of year 1, 2, ..., 20 after the rooftop solar system is installed.

Q. Why is the IRR used to evaluate a customer's investment decision in purchasing the rooftop solar system?

A. Staff is using the IRR because, unlike the NPV, it does not make a numerical assumption regarding discount rate. Given different perspectives on discount rates for various customers, using the IRR simplifies the evaluation. Generally speaking, the higher an investment's IRR, the more desirable it is to undertake the investment from the customer's perspective. Thus, the IRR can be used to rank multiple potential investments. In the bill saving model, the IRR provides an effective comparison for the financial feasibility of investing in a rooftop solar system under the four rate designs. Moreover, the IRR can also be compared against the prevailing rate of return in the securities market or accepted discount rate which are reference points for customers. For a customer considering an investment in a rooftop solar system, if the IRR for the investment is higher than his/her (publicly unknown) but accepted discount

Q. Are there additional assumptions in calculating the IRR?

rate, the investment is economically viable.

 A.

A.

Yes. An annual DG solar degradation rate of 0.25 percent and a lifespan of 20 years are assumed for the solar system. Moreover, in order to perform a sensitivity analysis, three levels of annual future utility rate escalation are assumed: 0 percent, 1.5 percent and 2.5 percent.

Q. How does the change of those assumptions affect the resulting IRRs?

The change of assumptions on annual degradation rate and annual future utility rate escalation will affect the numeric values of the resulting IRRs. However, the relative ranking among the